

Brief Communication: A Sample of Pediatric Skulls Available for Study

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Few juvenile skeletal collections in the United States are available for study. Stringent state laws prevent the trade and collection of skeletal materials. For example, Maryland state law declares that a person may not sell or buy any body, or any part of a body, that is under the exclusive control of the Maryland State Anatomy Board, and persons other than qualifying nonprofit organizations may not sell, buy, or act as a broker for a profit in the transfer of any human organ that is removed from a human body that is alive or dead at the time of removal and is not under control of the State Anatomy Board.

The impact of these laws significantly affects the skeletal material available to students and scientists. Although individuals can will their remains to science, the availability of human skeletal material appropriate to the studies of individuals related genetically or geographically does not increase. Furthermore, while adults can will their bodies to science, juveniles rarely choose to donate their bodies to scientific study. Often legal restrictions to donation programs do apply, including an age minimum (personal communication, Ron Wade, Maryland State Anatomy Board).

As prepared modern juvenile skeletal material can be difficult to acquire, archeological skeletal material can be difficult to study because archeologically exhumed materials are often broken and, in the case of juveniles, become disarticulated. Almost always, the integrity of the form of the original specimen is compromised. Although there are small samples of juveniles in many archeological skeletal populations, disarticulation and repatriation combine to make juvenile skeletal material even more rare than that of adults.

The purpose of this communication is to introduce and describe a unique collection of modern juvenile articulated crania with mandibles that is available for scientific study. The collection from this point will be referred to as the Bosma Collection, after James F. Bosma, M.D., D.D.S. This collection is unique because it comprises solely juvenile crania and because the crania are fully articulated. We have catalogued the dentitions, cranial and dental pathologies, and three dimensional coordinate locations of biological landmarks for each of the crania in the Bosma Collection.

There is some question as to the source of the skulls in this collection. To our knowledge, Dr. Bosma obtained anatomically prepared neonatal and infant crania from the State of Maryland Anatomy Board during the 1950s, and used them in the preparation of his text on the anatomy of the infant crania (Bosma, 1976, 1986; Pierce et al., 1978). Nothing about these specimens is known, other than the approximate age of each specimen, as there are no written records. We know that Dr. Bosma obtained eight neonatal crania (personal communication, James Bosma), but the number of juvenile crania he obtained at that time which are now part of the Bosma Collection is unknown. Dr. Bosma continued to add to this collection through purchases of juvenile crania from skeletal supply houses in the United

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Fig. 1. An example of three skulls from the Bosma Collection showing the age variation and completeness of the specimens.

States. Thus, it can be assumed that some of the crania may have come from overseas, as many developing countries were sources for such materials during the period in which Dr. Bosma collected the skulls (personal communication, James Bosma). When Dr. Bosma completed his research, the skulls were sent to the Uniform Services University of the Health Sciences and were put under the care of Dr. George Holborow. Rarely utilized, this collection remained in storage until we learned of its existence. The collection currently resides at Johns Hopkins University, where preliminary data have been collected and are being analyzed.

Collections similar to the one described above are rare. To our knowledge, another human juvenile cranial collection exists in the United States. The Atkinson collection, housed at the University of the Pacific School of Dentistry in Berkeley, California, comprises 1,350 individuals (crania, no skeletons) who are descendants of several different geographic ancestries and includes 33 juveniles of Mexican descent. The age range of the juveniles in the Atkinson Collection is fetal to 17 years. This collection is in storage currently, but will be available for study soon.

The 30 crania of the Bosma Collection (seven neonatal, 23 infant to late teen) have been aged using sequential dental eruption patterns (af-

ter Ubelaker, 1989). High resolution computed tomography images of these skulls have been produced. These images make analysis of internal cranial structures possible and allow for potentially more accurate aging on the basis of tooth bud formation. Three dimensional coordinate data collected from the CT images and the CT images themselves are available for study by contacting the second author. Current plans are for the collection to eventually be donated to the Department of Anthropology, Museum of Natural History, Smithsonian Institution, where it will be available for further research.

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